

LXV. *An Account of Dr. Bianchini's Recueil d'experiences faites à Venise sur le medicine electrique; by Mr. William Watfon, F. R. S.*

To the Royal Society.

Gentlemen,

Read March 12,
1752.

ABOUT the close of last summer, our worthy member the Abbé Nollet of Paris transmitted, as a present to the Society, a treatise, intituled, *Recueil d'experiences faites à Venise sur la medicine electrique, par quelques amateurs de physique, publié par M. J. Fortunat Bianchini, docteur et professeur en medicine, et traduit de l' Italien pour servir de correctif à la lettre sur l'electricité medicale.* This treatise, from the misfortune which we labour under from the present bad state of health of our excellent president, to whom it was sent, has not as yet been presented in form to the Society; but as you have already much interested yourselves in investigating the truth of the facts, which occasioned this publication, I take the liberty, from a copy thereof sent me at the same time by my kind friend and correspondent the Abbé Nollet, to lay before you a short account thereof. This indeed may be now thought less necessary, as, since the Abbé's journey to Italy, and our want of success here in our attempts to do the like, every body has consider'd what the Italians printed upon the transmission of odours thro' the pores of glass, and upon the subject of medical electricity,

electricity, as too hasty a publication. Mr. Winkler however from Leipzig sent to the Society, long since these publications, some tubes and globes, which he said had transmitted odours from electrifying. What he conjectured the glasses would do, fell infinitely short of what he first gave out; but even after the most careful trials, and complying with his instructions most scrupulously, we were disappointed in our expectations. I made no doubt therefore, but that the Society would be glad to be informed of what had resulted from the same inquiries elsewhere; and these are the subject of the treatise in question.

The experiments were made by Dr. Bianchini, assisted by several curious and learned men, who frequently assembled for that purpose. These gentlemen, struck with what had been published in relation to medical electricity, and not being able to separate what was true from among such a number of witnesses so directly opposing each other, determined to be guided by the result of their own experiments; and it was by this troublesome, though of all others the most sure way, that they have learned to reject a great number of what had been published as facts, and which the love of the marvellous in some, and credulity in others, had contributed to render famous in very distant countries. Having been informed themselves of what was to be depended upon in these matters, they then set about to give others the same information; and this occasioned the present work, where we find decisive experiments upon every question relating to the subject. These have been ingeniously imagined, sensibly conducted, ranged in proper order, robbed of all superfluous reasoning, and made

made just in the same manner as those of the academy *del Cimento*, the value of which every one present, I presume, is not now to be apprized of.

The truth of this publication is not to be suspected; it comes from the very place, where medical electricity took its rise; and is not the production of one person, who might be suspected too slightly to have admitted what might tend to favour his own opinions. These are facts consider'd in themselves independently of all application, decisions of the unanimous voice of a number of very sensible men, and in the face of a great number of witnesses, many of them prejudiced to the contrary, and but here forced to be convinced by the evidence of facts.

The gentlemen concerned in conducting these experiments divided them into three classes. The first class contains a series of experiments made with tubes and globes containing odoriferous or other substances, in order to observe, when these were closely stopped, whether the odorous, as well as other effects of the substances included, would pervade the glass. The second class includes experiments made with tubes and globes, which have nothing within them; but the persons electrified hold in their hands, or sometimes place under their naked feet, odoriferous, purging, or even the most poisonous substances, in order to observe, whether the persons electrified in this manner would be sensible of the effects of these substances. The third class gives us a series of experiments different from the two former, in which the substances before-mention'd are mixed with the water, as in making the experiment of Leyden. From these experiments we are to discover, whether from

receiving the shocks from these bottles, the person is sensible of the effects in his body of the substances contained in them.

I should be carried very far, were I to be too particular in my accounts of these experiments: I shall content myself therefore in mentioning to you the bodies employed, and the result therefrom.

These gentlemen tried sulphur powdered, camphor, musk, of all known bodies the most remarkable for its subtilty, volatile sal armoniac, a mixture of turpentine and storax, powder of Benjamin. These odoriferous substances were all severally put to trial in glasses closely stopped, and electrified a reasonable time. After the experiment, there appeared neither in the skin of the persons electrified, nor in the matter they perspired, in their beds, nor about their cloaths, any odours of the substances contained, sufficient to impose upon the most credulous persons.

They next tried in the same manner, whether the usual effects of medicines would be obvious in the persons electrified; and for this purpose quicksilver, gamboge in powder, and liver of antimony, were employed; but, contrary to what had been before published, not the least of their effects were observable. With a like event they tried opium, corrosive sublimate, and cantharides.

The next series of experiments were made by the person electrified holding the drugs, &c. in his hand. The subjects employed here were aloes, scammony, gamboge, opium, and corrosive sublimate. In one of these experiments, a boy of eleven years were electrified with his naked feet standing

standing upon cakes of pitch. Under his feet, and upon the pitch, was strewed a large quantity of powder'd scammony, so thick as to prevent his skin from touching the pitch. The scammony stuck to his feet, and his soles were in a manner cover'd with the powder of this drug. During the ensuing night and the next morning, the boy had four copious stools, but without pain or griping.

This effect excited some debates among the society. Some were of opinion, that the purgative power of the drug manifested itself by this new method of administration: others accounted for what had happened, from an alteration in the temperature of the air, which, from hot and serene, had become suddenly cold: some again ascribed it to the washing of the boy's feet, which immediately preceded his electrification; others attributed it to the immoderate quantity of fruit he had eaten. It was moreover insisted upon, that his being acquainted with what might be expected, might even so work upon his imagination as to produce this effect: but as a real matter of fact was the object of the debate, it was thought proper to make a fresh inquiry, without trusting to conjectures. Three days afterwards therefore he was electrified again with a fresh parcel of scammony added to the former, and the operation continued for the same time, and in the same manner, as before; but this produced nothing. No stools follow'd it, as in the former experiment. But to prevent any doubts arising from the above trials, they strongly electrified a healthy youth of about fifteen, with powder'd gamboge under his naked feet, for forty minutes.

During the operation he felt a great heat in his feet and legs, and a considerable quantity of the gum, which the heat had softened, stuck to the soles of his feet; but this person felt no disturbance in his stomach or bowels, and had but one stool in the subsequent four-and-twenty hours. So that, from all these substances applied to the skin, no effects could be attributed to the electrification.

In the third class of experiments the phial was employed, as in making the experiment of Leyden, and was first filled with camphorated spirit of wine. The shock from this was but feeble; whence it was judged, that spirit of wine was not capable of receiving any considerable degree of electricity*. The phial therefore was emptied of this liquor, and filled with clear water, with which was mixed half a drachm of flowers of Benjamin, and the mouth was closed as before. In making the experiment of Leyden, the stroke then was very severe to the observer, who drew the snap by accident from the wire of the phial. There was no one of the company, who was not desirous of bringing his nose near the electrified glass, in hopes of perceiving the smell of the Benjamin. Some of the company stood upon the resin, and holding their hands either upon the iron bar or the phial, caused themselves to be electrified twenty or thirty minutes; but no one could perceive the least smell of the Benjamin, not even in the hand, that touched the phial.

They

* The author of this account has consider'd this matter in a paper communicated to the Royal Society some time since. See *Phil. Transf.* Vol. XLV. p. 109.

They afterwards electrified in the same manner a quart of water, in which were dissolved an ounce of gamboge and an ounce and half of resin of jalap. A young man in perfect health grasped the glass containing this mixture between his hands: when he touched the iron bar, he felt a violent shock in his elbows and breast, which was a certain token, that the included mixture was become highly electric. This operation lasted twenty minutes, and yet the young man perceived not the least disturbance in his stomach, nor felt any thing to be attributed to the purgative medicine. It was then tried, whether the same glass would have any effect on persons electrified; for which purpose two young men stood upon the resin, where one staid thirty, and the other forty minutes, holding their hands upon the glass all the time, whereby the electricity was conducted to them, and the sparks drawn from their bodies were very bright: but neither did these perceive in this manner any effects of the medicines.

The last experiment these gentlemen made, was with cantharides powder'd and mix'd with water. This mixture was put into a phial, and three persons held it in their hands successively a considerable time. Neither of the three perceived any difficulty or heat in making water: their urine was neither more nor less in quantity than usual; and they had not the least symptom of any of those complaints, which cantharides never fail to produce, if taken internally, though in very small quantities.

There appears, through the whole course of the experiments contained in the work before us, a great deal of care and accuracy. They were made by
persons

persons fully acquainted with the manner of employing their apparatus, and many of the experiments were several times repeated.

After what has been done here at London, at Paris, and at Wittemberg, with the like success, these experiments, I presume, cannot, to unprejudiced persons, but be conclusive, that the miraculous accounts from Italy and Leipzig had no foundation in fact ; and that no method has yet been discovered, whereby from electricity the powers of medicines could be made to insinuate themselves into the human body.

This conclusion however does not, nor is meant to operate, against the advantages said to be gained by electricity itself. So subtil and so elastic a fluid admitted in a large quantity into our bodies, as, from undoubted experience, it greatly heats the flesh, and quickens the pulse, may, more especially when assisted with the expectation of success in the patient, in particular cases be attended with very great advantages. I am,

Gentlemen,

London, March 10,
1752.

Your most obedient

humble servant,

W. Watson.